Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Expanding Flexible Use of the 3.7 to 4.2 GHz Band	)	GN Docket No. 18-122
	)	
Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission's Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3.7-4.2 GHz Band	)	RM-11791
	)	
Fixed Wireless Communications Coalition, Inc., Request for Modified Coordination Procedures in Band Shared Between the Fixed Service and the Fixed Satellite Service	)	RM-11778

COMMENTS OF THE SATELLITE INDUSTRY ASSOCIATION

The Satellite Industry Association ("SIA")[1] hereby responds to the July 19th *Public Notice* in the above-referenced proceedings.[2] The *Public Notice*, among other things, seeks comment on a technical study (the "Reed Study") filed by Wireless Internet Service Providers

[1] SIA Executive Members include AT&T Services, Inc.; The Boeing Company; EchoStar Corporation; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; Maxar Technologies; Northrop Grumman Corporation; OneWeb; SES Americom, Inc.; Space Exploration Technologies Corp.; Spire Global; and ViaSat Inc. SIA Associate Members include ABS US Corp.; Airbus Defense and Space, Inc.; Analytical Graphics, Inc.; Artel, LLC; Blue Origin; DataPath, Inc.; Eutelsat America Corp.; ExoAnalytic Solutions; Globalstar, Inc.; Globecomm; Glowlink Communications Technology, Inc.; HawkEye 360; Hughes; Inmarsat, Inc.; Kymeta Corporation; L3 Technologies; Panasonic Avionics Corporation; Peraton; Planet; Telesat Canada; TrustComm, Inc.; Ultisat, Inc.; and XTAR, LLC. For more information on SIA, see www.sia.org.

[2] *Wireless Telecommunications Bureau, International Bureau, Office of Engineering and Technology, and Office of Economics and Analytics Seek Focused Additional Comment in 3.7-4.2 GHz Band Proceeding*, Public Notice, GN Docket No. 18-122 *et al.*, DA 19-678 (rel. July 19, 2019) ("*Public Notice*").

Association ("WISPA"), Google, and Microsoft,[3] including the study's use of "protection zones around [earth] stations [and] analysis of the relevant parameters of earth stations for protection (*e.g.*, elevation angles, range of pointing angles, and frequencies that are used)" for potential shared used of the C-band with a proposed point-to-multipoint ("P2MP") service.[4] As a threshold matter, SIA submits that the P2MP proponents have yet to articulate why they need access to the C-band when 10 gigahertz of spectrum is already available for P2MP operations. Nevertheless, if the Federal Communications Commission (the "Commission") decides to add P2MP operations into the fixed satellite service ("FSS") C-band as described in the Reed Study, SIA urges the Commission to conduct a careful analysis to confirm that FSS receive services will not be disrupted and to establish effective terrestrial operational limits and response mechanisms to address any harmful interference.

I. P2MP PROPONENTS STILL HAVE NOT DEMONSTRATED WHY THE C-BAND IS NEEDED FOR P2MP OPERATIONS.

As a threshold matter, there is absolutely no evidence to suggest that terrestrial fixed broadband access providers require more spectrum in order to expand their services. P2MP proponents tout the success of wireless internet service providers ("WISPs") in bringing terrestrial broadband connectivity to communities in which deployment of wired technologies may not be economical[5] and recite statistics regarding the percentage of Americans who continue

[3] Letter from Claude Aiken, President & CEO, WISPA, Andrew Clegg, Spectrum Engineering Lead, Google LLC, and Michael Daum, Technology Policy Strategist, Regulatory Affairs, Microsoft Corp., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122, Attachment (filed July 15, 2019).

[4] *Public Notice* at 5.

[5] Comments of the Broadband Access Coalition, GN Docket No. 18-122, at 11-13 (filed Oct. 29, 2018) ("BAC Comments"); Comments of the Broadband Connects America Coalition, GN Docket No. 18-122, at 18-19 (filed Oct. 29, 2018) ("BCA Comments").

to lack access to terrestrial fixed broadband systems.[6] But the conclusion P2MP proponents draw from this combination of facts—that access to more spectrum for terrestrial fixed P2MP services is needed to help bridge the digital divide[7]—is completely illogical. Clearly, WISPs have enjoyed success to date in supplying broadband service in less densely populated areas without the use of C-band FSS frequencies; there is no apparent reason explaining why they cannot use the same strategies and spectrum to satisfy any remaining unmet need for terrestrial fixed wireless access.

WISPs currently use a mixture of licensed and unlicensed spectrum that accounts for more than 10 gigahertz of total bandwidth and includes a substantial amount of mid-band spectrum.[8] Thus, any WISP who is interested in building out facilities to communities that lack other terrestrial broadband alternatives has access to ample spectrum resources—by definition, spectrum scarcity cannot be a concern in areas that currently are unserved by WISP networks.[9]

In addition, WISPs will have access to even more spectrum in the future, including the 3.55-3.7 GHz band and potentially the 2.5 GHz, 4.9 GHz, and 6 GHz bands.[10] P2MP proponents

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[6] BAC Comments at 8; BCA Comments at 5-7. As GCI pointed out, these statistics ignore the fact that satellite-delivered broadband service is available nationwide at competitive rates. Comments of GCI Communication Corp. GN Docket No. 18-122 *et al.*, at 24 (filed Oct. 29, 2018) ("GCI Comments").

[7] BAC Comments at 13; BCA Comments at 16.

[8] Comments of the Satellite Industry Association, GN Docket No. 18-122 *et al.*, at 24-25, n.79 (filed Oct. 29, 2018) ("SIA Comments") (citing a Carmel Group report available at WISPA's website).

[9] SIA Comments at 25; Comments of the Telecommunications Industry Association, GN Docket No. 18-122, at 8 (filed Oct. 29, 2018) ("[I]t is not clear that point-to-multipoint services in rural areas would be capacity-constrained to a level that justifies additional spectrum . . . .") ("TIA Comments").

[10] SIA Comments at 25-26; Comments of CTIA, GN Docket No. 18-122 *et al.*, at 26 (filed Oct. 29, 2018) ("CTIA Comments"); Comments of Nokia, GN Docket No. 18-122 *et al.*, at 10 (filed Oct. 29, 2018) ("Nokia Comments"); TIA Comments at 8.

have not demonstrated, and in fact have made no effort to demonstrate, that these current spectrum allocations are insufficient to support P2MP operations. Accordingly, there is no justification for expanding P2MP operations into the C-band.

Moreover, the same rationale that led the Commission to propose a sunset of fixed point-to-point operations in the 3.7-4.2 GHz band—the "availability of other spectrum options" for such services[11]—dictates that the Commission should decline to authorize new P2MP services in these frequencies given the substantial alternatives available for P2MP operations.[12] Instead, the Commission should focus on other bands to meet any demonstrated need for additional spectrum that can be used for terrestrial fixed broadband operations.[13]

II. THE REED STUDY RAISES MORE QUESTIONS THAN IT ANSWERS.

a. The Reed Study Would Effectively Eliminate Full-Arc Access.

As a preliminary matter, the Reed Study assumes that earth stations would not have access to the full arc of CONUS orbital locations that contain authorized C-band satellites.[14] But as SIA has previously argued in this proceeding, full-band and full-arc protection of C-band

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[11] *Expanding Flexible Use of the 3.7 to 4.2 GHz Band et al.*, Order and Notice of Proposed Rulemaking, 33 FCC Rcd 6915, ¶ 48 (2018).

[12] SIA Comments at 25; Nokia Comments at 10.

[13] SIA Comments at 26; Comments of The C-SPAN Networks, GN Docket No. 18-122, at 4 (filed Oct. 26, 2018) ("C-SPAN Comments") ("C-SPAN urges the Commission to focus on other spectrum that is not as intensely used as the C-Band to meet requirements for additional frequencies suitable for P2MP operations"); CTIA Comments at 26 ("Other bands are more appropriate for P2MP stakeholders that wish to enter the market – particularly with small rural offerings"); GCI Comments at 24 ("[T]he FCC should take a closer look at the FS community's proclaimed need for access to the C-Band, and other available options before acting on the BAC Proposal."); Nokia Comments at 10 (the Commission should "look to other spectrum bands to accommodate point-to-multipoint service, if it determines such a special allocation of this type (as opposed to the overwhelming trend toward flexible use allocations) would serve the public interest").

[14] *See* Reed Study at 23 (assuming -10 dBi, which is used for look angles equal to or greater than 48°).

earth stations serves critical public interest objectives.[15] First, satellite service users stress that the ability to quickly change antenna orientations without the need for regulatory approval is essential to ensure service continuity in the event of an outage affecting the user's primary space segment, to accommodate a transition to replacement capacity, or to mitigate the effects of periodic sun transit events.[16] Second, full-band, full-arc licensing of earth stations is essential to the competitiveness of the FSS ecosystem because it allows customers "to negotiate for satellite service from the largest possible universe of space station licensees."[17] If earth stations cannot easily re-point to new orbital locations because of interfering P2MP operations, then they are effectively barred from moving to a new satellite service provider. Finally, coverage of breaking news, live sports, and other special events also requires earth station operating flexibility.[18] In such cases, the service provider will procure an expedited coordination to determine what uplink transmission frequencies are available for use in the area during the period required and then find a C-band satellite with capacity available in that bandwidth.[19] Any site that will be receiving the

[15] In the event part of the C-band spectrum is reallocated for flexible use, "full band" would refer to the remaining portion of the C-band spectrum that would continue to be allocated for FSS.

[16] *See, e.g.*, Comments of Comcast Corporation and NBCUniversal Media, LLC, GN Docket No. 18-122, at 34 (filed Oct. 29, 2018) ("Comcast Comments"); Comments of the Content Companies, GN Docket No. 18-122, at 9 (filed Oct. 29, 2018) ("Content Companies Comments"); C-SPAN Comments at 4; Comments of Cumulus Media Inc. and Westwood One, LLC, GN Docket No. 18-122, at 12-13 (filed Oct. 29, 2018); Comments of Extreme Reach, Inc., GN Docket No. 18-122 *et al.*, at 5 (filed Oct. 29, 2018); Comments of the National Association of Broadcasters, GN Docket No. 18-122 *et al.*, at 13 (filed Oct. 29, 2018) ("NAB Comments"); Comments of the North American Broadcasters Association, GN Docket No. 18-122, at 4 (filed Oct. 29, 2018) ("NABA Comments"); Comments of NCTA – The Internet & Television Association, GN Docket No. 18-122 *et al.*, at 25 (filed Oct. 29, 2018) ("NCTA Comments"). Indeed, if full-arc protection is eliminated, it would be even more critical for earth station operators to retain the flexibility of full-band protection. *See, e.g.*, NAB Comments at 13.

[17] Comments of AT&T Services, Inc., GN Docket No. 18-122, at 13 (filed Oct. 29, 2018).

[18] *See* SIA Comments at 23; Comcast Comments at 35; Content Companies Comments at 9-10; NABA Comments at 4; NCTA Comments at 25-26.

[19] *See* Comments of PSSI Global, GN Docket No. 18-122 *et al.*, at 5 (filed Oct. 29, 2018).

live feed must be able to point its antennas to the selected satellite and use the downlink frequency that corresponds to the uplink channel that has been coordinated.

Any consideration of the proposal in the Reed Study must include additional analysis to ensure it fully protects C-band earth stations' ability to access all authorized C-band satellites. In order to ensure that current and future C-band users have comparable capabilities, the remaining C-band spectrum available for FSS must not be encumbered by new spectrum sharing models that would limit the possibility of offering full-band, full-arc services.

b. The Assumptions in the Reed Study and Resulting Restraints on Earth Station Operations Must be Fully Analyzed.

In addition to the impacts on full-arc access described above, the Reed Study also unrealistically claims that the use of the 3GPP 38.901 Rural Macro non-line-of-sight propagation model is appropriate and even "conservative."[20] But the study fails to substantiate why it is appropriate to assume that clutter blocks all paths between P2MP base stations and potentially affected earth stations.[21] Indeed, Google and the Broadband Access Coalition previously relied on the National Telecommunications and Information Administration's Irregular Terrain Model for propagation modelling in their March 2018 study, which found "60 – 75 km" co-channel exclusion zones are needed to protect incumbent FSS operations.[22] And there is no discussion whatsoever regarding why that propagation model is now incorrect.[23]

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[20] Reed Study at 3.

[21] To support its extraordinary conclusion, the Reed Study simply makes a conclusory statement that obstructions would appear between P2MP base stations and FSS receivers: "Terrain, trees, bridges, gas stations, churches, residences, water towers, barns, restaurants, silos, berms, … (the list goes on)!" *Id.* at 15.

[22] *See* Letter from Steve Coran, Counsel, WISPA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 17-183 and RM-11791, attachment at 5, 11 (filed Mar. 29, 2018).

[23] *See* Reed Study at 13.

In addition, the Reed Study uses a base station height assumption of 35 meters,[24] which "leads to a lower potential for interference from P2MP into FSS [that] is unlikely representative of the most commonly used height for P2MP services."[25] Broadband Access Coalition members have stated that base stations for fixed wireless services are often placed on "tall structures like grain silos or water towers."[26] The heights of these constructions can vary between 10 and 90 meters.[27] As the C-Band Alliance pointed out, Midcontinent Communications sought experimental licenses for C-band P2MP using antenna heights of 45 to 80 meters.[28] The Reed Study's low antenna height assumption is thus not a realistic operating parameter for P2MP systems and the impacts of more realistic deployments must be studied.

c. The Reed Study Does Not Address How the Source of Harmful Interference Will Be Identified and Addressed.

The Reed Study does not analyze how in-band and out-of-band emissions produced by potential P2MP operations in the aggregate may cause unacceptable interference, nor does it address how such emissions when aggregated with out-of-band emissions from terrestrial mobile operations in the lower portion of the band could interfere with FSS receive operations. If the Commission decides to proceed, it must conduct a careful analysis of aggregate power from all potential terrestrial sources into sensitive receive antennas to determine the operational limits

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[24] *Id.* at 23.

[25] *See* Reply Comments of the C-Band Alliance, GN Docket No. 18-122 *et al.*, at n.189 (filed Dec. 7, 2018).

[26] *See Realizing the Benefits of Rural Broadband: Challenges and Solutions*, Hearing before the Subcommittee on Communications and Technology, of the House Committee on Energy and Commerce, 115th Cong. (2018) (written testimony of Claude Aiken, President/CEO, WISPA), *available at* https://bit.ly/2GAmrb4.

[27] *See* Comments of the C-Band Alliance, GN Docket No. 18-122 *et al.*, Technical Annex at 17 (filed Oct. 29, 2018).

[28] *Id.* (citing Application of Midcontinent Communications, ELS File No. 0866-EX-CN-2018 (filed Nov. 5, 2018)).

that must be imposed on P2MP operations. The Commission should also develop a mechanism that allows earth station operators to determine which terrestrial P2MP operator is causing harmful interference and ensures that such interfering operations are addressed immediately.

III. CONCLUSION

For all of the above reasons, SIA urges the Commission to reject the proposals to introduce P2MP operations into the upper portion of the C-band. As SIA has emphasized throughout this proceeding, satellite services provide tremendous public interest benefits, and the Commission should continue to ensure that these essential services are protected and preserved.

Respectfully submitted,

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